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Re-Assessing Assessment: Implementing Constructivist Testing With New And Existing Curriculum

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RE-ASSESSING ASSESSMENT: IMPLEMENTING CONSTRUCTIVIST TESTING WITH NEW AND EXISTING CURRICULUM

by

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TABLE OF CONTENTS

Chapter 1: Introduction

Introduction

Quality assessment methods are often a point of contention among teachers. Many have their preferred method, maybe due to perceived student success, ease of grading, or simply tradition. The question then becomes: What makes a test *good?* Should assessments be hyper-objective, black and white questions? Should they make their subjects think critically and apply? Or should they be recall-based to ensure baseline proficiency? In my mind, and in those of my colleagues, we have come to agree that summative assessments should be a way to gauge student understandings and proficiencies.

Last year, as I was a new teacher in the district, I generally deferred to my like-subject teacher in terms of assessment methods and styles. We used very traditional assessments that utilized a majority of multiple choice or matching questions with one or two essays. I found that as students finished tests, they would report that they felt confident on their answers. However, even feeling that confidence, we had fairly low averages across the board and I began to wonder why. Upon examining the questions of the tests we realized that many of them were poorly structured. They either asked too little of the students or too much. Some could be answered without any direct knowledge of the topic and just a little educated guesswork. At the same time, many were worded too specifically or complex, or the answers were obscure and difficult to pinpoint.

This pushed me to look into other types of testing. We talked through performance-based assessment, project-based assessment and many others

until we settled on written or typed essay tests. The idea behind this is that students would be able to present their knowledge in their own words, focusing in on the areas in which they have a greater understanding. The same subjects, standards and questions will be asked, however they will be presented in a more constructivist setting where student choice can be utilized and their actual knowledge of the content can be examined. This type of test can be easily differentiated for Individual Education Plans (IEPs), 504 Plans, and English Learner (EL) students, asking varying requirements of written responses. In our minds this style of testing will both help us address the knowledge growth of students, but also help the students better relay what they know, creating higher rates of academic success. Thus the question I seek to answer in this research is: *How best can educators implement constructivist assessment in a way that benefits all students?*

This chapter will outline the justification for why I believe the move to open-ended testing will be valuable for students, teachers, parents, and administrators. It follows both my professional and personal rationale for implementing this idea along with the benefits of the program. As a part of the reasoning behind this structure, I point out some common testing flaws. The examples mentioned are not meant as an attack, more so as pointing out the potential downfalls of more traditional methods.

Rationale

While the benefits of constructivism in the classroom have been widely researched and fortified, many teachers still do not have a sense of how to

implement these practices effectively in the classroom. For teachers who are just beginning, utilizing these strategies can seem overwhelming when you look at the time requirement that it adds to grading and giving feedback. For many veteran teachers, the idea of reworking their "tried and true" curriculum might seem a ridiculous waste of time that they could be using for other activities. No matter what the perspective of the educator, converting to this style of assessment is difficult and time consuming. However, without it, we do a disservice to our students in the school.

The goal of all summative assessments, from an instructional standpoint, should be to gauge and measure students' understanding of content material, either by measuring skill proficiencies, standardized requirements, or both. In this sense, traditional tests pose a number of problems. The skills educators ask of their students to develop are usually the highest tier of Bloom's Taxonomy: Analyze, Create, and Evaluate (Bloom 1956). The basic testing structures--such as True/False, Multiple Choice, or Matching—very rarely provoke thought beyond the lowest levels of Recall and Memorization. Educators want students to be developing their analytical skills and abilities and if the tests are not designed to measure that, then the tests are poorly created and unhelpful to the cause.

In a similar vein, when teachers are attempting to assess standardized requirements, these tests fail to meet a standard of efficacy required. Multiple choice, true/false and matching problems can fall into a number of pitfalls. First, if they are constructed improperly, they can be almost impossible to answer correctly. A poorly worded question will never accurately reflect student

knowledge. Second, teachers and educators often fall into the trap of incorporating gimmick answers like teacher and school names, or movie titles. While this might seem like a fun and harmless way of narrowing down the choices, it also means that students who are unprepared can make their guesses more accurate. Similarly, with all of the aforementioned question types, students can use various context clues or test-taking strategies to narrow down their options. Using grammar rules, parts of speech, and basic general knowledge, students can game their way through various standardized question formats.

Constructivist assessments address just about all of the weaknesses of traditional testing. First, it not only requires recall and memorization, but pushes testers to apply that information and demonstrate their understanding. Without some degree of knowledge of the topic, any level of analysis or application would be near impossible. It also allows for students to demonstrate what they have learned and show their proficiency, in a much more open-ended setting, where conceptual understanding and application are valued more than the rote memorization of key facts. This blends the idea of testing content knowledge and application of those skills simultaneously. In nearly every facet, this testing style is more productive and authentic at measuring student growth and proficiency.

Ideally moving forward, the field of education could see a shift in standardized testing from the “high-stakes” objectivity of multiple choice, to the open ended, reflection and application-based constructivist styles. Some leaders in the field of education have even gone as far as to propose potential reform in

terms of standards-based testing, moving to more dynamic assessments (Lin, 2002). Realistically, we could see a drastic change in the near future regarding high stakes testing and the methodology that accompanies it. No matter what the outcome of these changes, this structure will set students up for success.

Personal Context and Value

Personally, this topic means a lot to me. The past two years I've both co-taught SPED integrated world history classes and mainstreamed grade level world history classes. My first year in the district, I saw students who were fully capable and understanding of the content fall victim to poor test design and preparation. After looking at the tests, I realized that the tests were not assessing understanding or knowledge, rather they were testing whether or not they knew how to take an exam. After teaching a mini-unit on test taking strategies, I realized that the problem was not that the students did not know how to test. The problem was that the tests were assessing that *over* their content knowledge. After beginning my master's program and discussing constructivist classrooms and designs, I realized that this style of assessment not only was intriguing, but fit my students better. This year has been the first year of implementation, and already we see much higher rates of proficiency and understanding mapped out by unit. While it is new ground for most of the students, we have seen a lot of buy-in at the individual level and many students are acknowledging that while it feels tougher, they walk away feeling better about the assessment.

One of the main reasons I became interested in the program was seeing my Special Education students struggle through the heavily modified test. They were getting copies with answers crossed out, or questions removed and I realized that the state of their paper was as distracting and stressful as the test itself. I realized that by shifting the modification and accommodations of their IEP to the grading end, rather than frontloading it to test construction, it could greatly benefit their learning. This idea is reinforced by a study by Meltzer and Reid, in which they address the failures of traditional assessments by saying:

> Assessment measures must...address both the higher-level conceptual components of learning and the lower-level basic skills... Assessment measures that fail to evaluate all the critical components…fall short of the goal of helping children to attain their potential. (Meltzer & Reid, 1994)

This inspired me to try and design a test that both addressed the necessary components of those lower-level skills, while also bridging the gap to the creation and synthesis levels of thinking.

This testing style is very different from the traditional style, and because of that, I did find some initial pushback from students. However, after a simple explanation of it, both students and parents have been very receptive to it. The feedback I've gotten most often from students is that while they are taking it, it seems more difficult but after the fact, they are much more confident on their answers. It feels harder to them because they have to actually think and apply the information they have learned, rather than just pull out randomized facts and put them down. The selected content is fair, meaningful and well thought-out.

Thankfully, administration, parents and coworkers all have seen the value and the change it has brought to some of our student success rates.

As this project will point out, this testing style is an investment. It does require more from both the teacher and the students but also benefits each in return. Students will have an assessment that fairly and accurately measures their ability and teachers will have a complete and total understanding of the students' knowledge and whether or not they have reached the required level of proficiency. This project will ideally help educators to add this assessment structure to their already existing curriculum and modify their current tests to more constructivist ways of thinking.

Summary

Constructivist assessment allows for greater detail to be presented by the students in providing an explanation about the content they have learned. It asks students to climb to higher level thinking layers rather than only utilize rote memorization and recall. This application and often reflection based assessment better measures students' actual proficiency against content standards and skills. This project will hopefully alleviate some of the stress and confusion in adapting current tests or creating new tests that both utilize this structure but also fit into existing curricula.

I have pushed for this type of assessment to be used in my department and slowly we are seeing students acclimate to the structure and excel with it. The open-ended options of an essay assessment allow for great levels of

accommodation and individualization for all students and can be easily modified to fit various IEP's. This method greatly benefits students, teachers and parents of all types and takes into account various skill growths as well as baseline proficiencies.

The importance of this topic as a research project is to provide educators with a holistic source with which to modify and adapt their current testing method. The question this seeks to answer is *how best can educators implement constructivist assessment in a way that benefits all students?* We know through previous research and survey that constructivist assessments are better for our students in accurately assessing their growth and knowledge. We can also identify that the results of those assessments are stronger cases for us as educators to challenge our students. Constructivism is a very popular field for educators and as such, has a plethora of applicable research. The following literature review in Chapter two aims to justify the creation of a research as a not just an aide to teachers but a necessity.

Chapter Two: Literature Review

Introduction

The intentions behind this project are to show the merits and accessibility of using alternative styles of assessments over traditionally designed exams. Research has and continues to prove the importance and success of these new varied testing styles. My experience at the high school level has shown that traditional assessments measure purely the student's ability to take a test. In some cases, students can have almost no knowledge of the content and still be able to succeed on tests because they know how to answer questions. The goal of making this switch is to make tests more focused and to clearly assess the knowledge gained during class. While this can seem like an overwhelming task, this project should help break down the idea into very simple steps for educators to take.

The guiding theme of my research is bettering tests in a way that makes it accessible for students and educators, and in a sense to answer the following question: *How best can educators implement constructivist assessment in a way that benefits all students?*

However, it is important to note that within education, it can be difficult to come to a standardized definition of terms or concepts. It is even harder in some cases to find these terms adequately defined in their usage. In this chapter, I will lay out usable and research established definitions of major ideas and themes within this topic. I will address constructivism as a concept, the types of and

purposes of assessments, and how to measure and understand student growth and achievement. Creating this baseline understanding will help us make more sense of the discussion surrounding testing styles and the implementation of them.

Constructivism

Constructivism as an educational concept is not new. It has been and remains one of the cornerstone ideologies of the field of education. This is a learning theory that states that learners actively construct their understandings of the world around them (Comstock, 2013). The main idea is that new ideas and experiences build on top of each other and help construct an understanding and viewpoint, which can—and often should—be different for almost every student. Often times, the idea of constructivism is paired with execution through backwards design units, where the end goals of units are clearly established at the beginning of unit design, and the assessments are predetermined for the unit's activities. The reason this works well in context with our topic, is that in order to create a "fair" test, the information *must* be covered in the units.

Constructivism rejects a lot of preconceived notions about knowledge and understanding (Prawat, 2008). What this means is that rather than viewing learning as a simple task that just occurs in some situations, it implies that learning is a complex task that happens over long periods of time, developing as the individual develops themselves. This fundamentally changes the way education is viewed, because it acknowledges the formation of information to be a combination of students individually forming information around their own

community with adapting and changing that understanding as time progresses and new information is learned.

Fields of Constructivism

While the major tenets of constructivism hold true no matter who discusses it, there are a variety of camps in terms of how best to implement the concept. The two major groups of constructivists are split between Vygotskyan Constructivists and Piagetian Constructivists. Vygotsky's view focuses in on metacognition and scaffolding ideas (Schreiber & Valle, 2013). On the other hand, Piagetian Constructivism delves into the psychological idea that humans by nature will strive to make order out of the universe around them and "produce representations of an independent reality" (Fosnot, 2005, p. 3). While both of these constructivist viewpoints are unique and have their own merits, both of them play into our more nuanced understanding of constructivism that we will be using in this project.

Vygotskyan Constructivism

Lev Vygotsky was a Russian psychologist best known for his developments in understanding the world through the idea of "zones of proximal development." (Vygotskty, 1930, 1934-1978). While not directly related in origin to constructivism, the ideas draw a lot from each other and build upon each other. Vygotsky's view of proximal development meant that information and instruction should be "scaffolded"—that is introduced through modelling, and then supporting students. This is critical to the theory of constructivism in that the

ultimate experience of learning occurs as the students construct meaning through their own actions in application.

Scaffolding as a practice requires the belief that children are at their core social beings (Eshach, Dor-Ziderman, & Arbel, 2011). Meaning, learning for students requires social interaction to learn new material. This is a unique nuance to the idea of constructivism as it requires a more interpersonal style of instruction. In terms of addressing Vygotskyan Constructivism in assessments, it could manifest itself in two main ways. First, the views of scaffolding require modelling by the teachers in terms of expectations and requirements. Whatever is asked of the students in the exam should be properly shown to the students ahead of time to make sure they have the proper scaffolds built up. While scaffolding goes by many names in the field of education, it is a common practice that almost all teachers use in some form.

Piagetian Constructivism

While Vygoskty viewed learning as a collaborative endeavor, Piaget held almost the opposite standpoint. Piaget viewed constructivism as a way that individuals construct their own understandings of the world, independent of others around them or connected to them (McLeod, 2009). Piaget viewed that every person had their own experiences and those experiences led to building their own in-depth understanding of the world they live in. The focal point of Piagetian constructivism is that although social interaction may play a role, the basis of student instruction should be focused around appealing to stages of learning styles that all children and students progress through in a linear fashion.

He believed that through his research, children advanced through four stages of development: Sensorimotor, Preoperational, Concrete Operational, and Formal Operational (McLeod, 2009). His belief was that children advanced through a series of unique experiences and processes that act as a sort of “cause and effect” relationship that in turn, grows and develops their understandings of the world.

Piagets stages each present unique opportunities to cater the assessment to the child. Most children in the Sensori-motor stage would not have interactions with formal assessment, as this period lasts from birth to around two years of age. However, students in the pre-operational stage—approximately aged two to seven—are more prone to having their thoughts dominated by what they see and experience. Students aged seven to roughly eleven years of age move into the Concrete Operational Stage, where logic and reason can only be applied to physical or real objects. Referencing metaphors, hyperboles or figures of speech would easily confuse a child in this stage. Finally, those aged twelve and onwards are in the Formal Operational stage, where individuals can analyze abstract ideas with logic and reason. Each one of these stages has its own focus for the individual and should be rightfully weighted within that age range.

In regard to constructivism, this mentality of the stages of learning be defined and predetermined does help educators in creating experiences that play into the cognitive stage of their age range. From kindergarten through college Piagetian cognitive stages are always playing into the way people learn and perceive information.

A Compromising Definition

As stated earlier, both of these viewpoints of constructivism are valid and have their own supporting research. While they present different, and sometimes opposing viewpoints, there are ways to blend them in creating a constructivist definition that fits most classrooms. Fully constructivist classrooms should focus on appealing to students at whatever level they are on, instructing them through tried and true methods that work at their age range and development. At the same time, it should acknowledge and represent the importance of communication and interaction in forming these complex understandings of knowledge. Only through a combined metacognitive understanding of the way knowledge is constructed, does constructivism itself become a valuable tool in the classroom.

Measuring Student Growth and Success

All educators would agree that student success and growth are their primary concerns with their field. However, those terms on their own have a lot of ambiguity. What constitutes adequate growth? How can success be measured? Often these terms are thrown around in order to justify implementing some new practice or idea. However, without establishing what these terms actually mean in an academic sense, their pursuit is meaningless in its entirety. To give this discussion the required merit that it deserves, a baseline understanding of what these terms mean in our specific context must be established.

Student Growth

Student Growth seems to have taken emerged as a new education buzzword, and at this point, for many it has lost most of its meaning. Measuring growth for the purposes of this research should indicate the student has improved their ability to apply and utilize information in front of them, rather than measuring the growth of how much information a student can recall off hand. This can be measured a number of ways, but the key to each of them is multiple assessments. Growth is not a single numerical statistic that can be drawn from one assessment. This kind of information has to be gathered over a long period of time, matched against the same standards and compared through multiple different assessment types. Only through this procedure can one determine the growth of a student, rather than just a temporary benchmark of that student's ability.

Student Success

Student success, like most other terms in the field of education, has a relatively nebulous definition that can be maneuvered and modified to relay just about any message available. With that in mind, it's important to create an established definition for both of these terms. In discussing student success through the lens of assessment, it is important that we understand success as not only showing that they understand the content put in front of them, but also whether or not they can apply it in new scenarios. Student success is also almost always measured by outside third-parties. Whether that is a testing

company, state standards or even school-wide goals, usually the students are unable to determine their own measures of success.

Often success is measured as a proficiency score, against a standardized benchmark either on state standards or some form of nationwide test. When schools and administrations get that data, it can be the focal point of many initiatives and focus groups. However, these cannot be the only method of creating change in terms of rates of success. As found in a study of nation-wide community colleges, "[school] culture must be transformed to one where the community truly believes in the right to succeed" (Baldwin et. al., 2011, p. 86). This means that at the most local level of school, the climate must be one of encouraging student success.

Measuring These Goals

Measuring Growth and Student Success is a very difficult task. Traditionally, the method has been through hyper-objective standardized tests, often loosely related to the state standardized content goals, but also requiring a fair amount of understanding the "hidden curriculum" of test taking. Many researchers at this point have identified that there is little to no evidence of standardized tests accurately assessing student knowledge and understanding—rather they assess whether the students know how to take a test or not (Fisher-Ari, Kavanagh & Martin, 2016). The administration of standardized tests as adequate proof of learning is unacceptable.

Also to note, student success and growth are inherently linked. If students perform under proficiency those success rates do not increase on their own, independent of other variables. To increase student success, it's imperative that student growth increases, rather than stagnates. While both of these are measurable and individual ideas in the realm of education, they exist in the same plane, blending their outcomes.

Purpose of Assessment

As long as the field of education has existed, there has been assessment in some form. However, as time progresses the purpose of that assessment has changed. Even now in many of our modern views of education, assessment has various purposes and uses. Here we will discuss the terms of assessment styles and their various established purposes. We will also create an established purpose for assessments as they should exist in constructivism and justify it through research

Historical Differences

Throughout the history of formal education, there has always been assessment. The best way to understand how successful something is, is to test it. However, the intentions and motivations behind testing have shifted over time to focus on different perspectives in education. At one point, assessment was used solely to measure the specific academic gains a student made within a system. However, as time progressed, and through various pieces of educational legislation, the purpose of assessment started to careen more

towards assessing schools, educators and programs, rather than for students. We can look to programs like “No Child Left Behind” and to a lesser extent “Every Student Succeeds Act” (ESSA) as to why standardization has taken over United States curriculum (ESSA, 2015). This has been a common strategy to address “underperforming” schools in the United States, however it does not address the problem and really creates a vicious cycle that traps schools in disenfranchisement.

Standardized testing, while originally having good intentions, have perverted assessment in the American school system. The Council of the Great City Schools, a joint board of educators and administrators from major school districts across the country, surveyed its districts and found that during the 2014-1015 school year, over 400 *unique* standardized tests were administered in their schools (Hart et al., 2015). This takes away meaningful time and instead of using assessments as tools to measure, makes them the goal of the curriculum. Although, it should be noted standardized tests can be effective. They can relay important information regarding proficiency levels and how close students are to meeting them. However, these types of tests often do not help students accurately display their knowledge. In fact, some studies go as far as to posit that high-stakes testing (MCA, ACT, SAT, etc.) should switch to a more “performance style” assessment as it would benefit the test takers more (Lin, 2002). These types of assessments generally allow for better wide-spread indication of understanding and knowledge.

Modern Differences

In current education “best practices” assessments are generally folded into one of two major categories: Formative or Summative. According to Black and William, Formative assessments can be defined as:

> “Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.” (2009, p 9)

This means that a formative assessment is anything used in a way that helps the instructor modify or adapt their curriculum to their students’ needs. This is not necessarily a final product or an end goal, but rather a stepping stone along the way. These can manifest themselves in a variety of ways, including 3-2-1 charts, exit polls, and think-pair-share (Watanabe-Crockett, 2016). These activities are focused on gaining an understanding of where the student is and measuring it against where the student should end up after the class. In a discussion on Assessing Learner Progress, Zvacek asserts that “teachers [can] provide remediation or correction where necessary, or determine if a student needs additional assistance” (Zvacek, 1999).

On the other hand, summative assessments are meant to be more representative of knowledge gained. While more traditional, they still can take on

a great many forms. Summative Assessments can be anything from standard, multiple choice assessments, to even more nuanced project or performance-based assessments that push students to do more application-based assessments. The major goal as that they should be assessments *of* learning, whereas Formative Assessments need to be assessments *for* learning.

Content Mastery vs. Test Taking Skills

There needs to be another important distinction made. Assessments need to measure how much the individual knows about a given content area, not how well students can test. Traditional assessments, as viewed historically, have required specific skills of "writing to the clock" rather than covering a wide variety of topics (Inglis & Aers, 2008). Likewise, the intent should be students achieve a content *mastery*, not just perform well. Assessments should both show the growth of content skills, but also show the mastery of those skills in an environment that does not make scoring competitive or comparative. Studies have shown that focusing more on the mastery of a content subject, rather than competing for performance-based scores, helps all students perform at higher levels (Souchal et al, 2014).

Established Motivation for Assessment

In a study, it was found that many teachers held multiple conflicting views about assessment, including the view that it is useful for informing teaching and accountability while at the same time irrelevant (Barnes et. al., 2017). In order to make this a more cohesive discussion of the methods of implementing certain

testing styles, it is important that we understand exactly *why* we test. For the purposes of constructivism, it is of utmost importance that assessment be designed for the sole purpose of assessing student knowledge, either in a summative or formative matter. Both of these purposes can utilize constructivism, however there is a singular limiting factor. Constructivist testing *cannot* be used in a setting where the assessment is more important than the student who is being assessed. The underlying motivation for the constructivist assessments in the classroom must be geared to only assessing the students' knowledge, with no ulterior motives whatsoever.

While the types of assessment are somewhat linked in with the purpose, in the terms of the test creator, it will be measured and addressed in the next chapter. However, in some cases the purpose of test can affect the manifestation of it. For example, in a discussion on the purpose of assessment in the classroom, Newstead presents somewhat of a linear spectrum:

> "Samuelowicz and Bain suggested that the responses they received could be placed on a continuum. At one end of the spectrum, some lecturers perceived the purpose to be assessing students' ability to reproduce information; at the other end, the purpose was seen to be that of assessing the ability to integrate, transform and use information purposefully" (2004, p. 97)

The two, polarized purposes as presented here would produce wildly different assessments if they were each the individual focus for the assessment. While it can be said these viewpoints may seem opposed, there is in fact no reason why

assessments as tools cannot be utilized in a way that *both* requires some degree of recall and reproduction and also integration and application of the material. In fact, the best assessments blend these two purposes to let students show total comprehension in both knowledge of the subject and how to apply that knowledge in other areas.

Types of Assessment

Now that we have discussed the various intentions behind assessment and what an educator's goal should be when assessing, we can begin to examine the various types of assessments that are available to us. When it comes to what assessments look like, there is almost no way to count how many different variations there are. No single correct testing style or method that works best for all students, content areas or ages exists, and because of that instructors have to balance out the pros and cons of each style in a way that utilizes the strengths of as many types as possible. In this section we will discuss traditional assessments, performance—or project based—assessments, and essay assessments. We will also introduce the idea of "constructivist assessments" and what shapes they can take in the classroom.

Traditional or "Standardized" Assessment

More and more in the American educational system "objective" standardized tests are being heralded as the be-all end-all of child growth and proficiency. The composition of these tests is usually the same: A large number of multiple choice questions, followed by a handful of True or False, Fill in the

Blank, Matching, or Ranking questions, with one or two short answer questions at the end. These types of test have served teachers well for a long time for a number of reasons. First, they are easy to create or readily available. Usually tests are created and distributed by textbook companies to accompany the texts the classes follow, and the answer keys are readily available. They're also easy to grade. With the introduction of Scantrons and sites like Schoology, grading can almost be 100% automated. Finally, it's tradition. This is what we had for tests, and for a lot of teachers, it is what they expect to use to test.

The problem with these kinds of assessments are that they tend to test how well students can take tests rather than how well students understand and comprehend the content knowledge. While they have functioned for many years, they can be improved upon and developed. The issue lies in that students need only retell the information they learned—they are not asked to do anything with it or prove connections to other material. For this reason, some professionals have begun to advocate for removing them from the testing repertoire (Brook, 1999). In some cases, experts have even begun discussing the reworking of "high-stakes" standardized assessments to more open-ended essay prompts, specifically tested with the GRE (Powers & Fowles, 1999). Traditional exams have served a purpose, but in today's educational climate, serious changes need to be made.

Performance or Project Based Assessment

These types of assessment often ask different questions than their traditional counterparts. Whereas multiple choice tests may ask single answer

questions, these assessments become quite a bit more reflective and constructive. It is important to note that in this context, “performance based” has a different meaning than in discussing the purpose of assessments. Here, performance based assessments are considered creative assessments that focus on creativity, construction and synthesis. Some studies go as far as to posit that high-stakes testing (MCA, ACT, SAT, etc.) should switch to a more “performance style” assessment as it would benefit the test takers more (Lin, 2002).

One of the more popular performance style assessment that some teachers have switched towards are Project Based Assessments. True to the name, the assessment here comes from completing some task or activity that replicates real life projects or actions that might be done by a professional in that field. This type of assessment has a lot of positive aspects. For one, by definition it is an authentic task that creates and develops meaningful skills in the students. This type of test still assesses the knowledge of content and standards, but allows students to show it in a more creative style that can be more open. Some classrooms that have switched to this have seen immense growth. Knapp switched the more traditional, multiple choice style tests in her college courses and found that the response to this shift from the students was almost entirely positive, in that they believed it encouraged them to actually learn more and be able to apply the information they had learned (Knapp, 2000).

However it should be noted that these types of tests, have two major flaws. Firstly, they are much more intensive on the side of the educator, not only

in creation but in grading as well. The grading of these types of assessment can be a lengthy process, depending on the project type. To give meaningful feedback on a project like this requires a detailed, individualized study of each independent project. In a similar vein, there is no way to objectively grade these types of projects, meaning the grades are affected by any subjective criteria that come up. While things like rubrics can help this, it can be very difficult to parse out what are content issues and what are format issues when assessing knowledge.

Essay Assessment

Essay assessment can be one of the most intimidating styles of assessment both for the creator and the test-taker. Because of the subjectivity and the overwhelming scale of grading classes worth of essays, this can seem like a very difficult test style to implement in the classroom. However the success of this type of assessment is almost unparalleled. A study done, using primarily an economics classroom, found that essay tests do a much better job of accurately assessing student knowledge, however the author admits that many educators struggle to successfully implement this style because they are unaware of the pitfalls within the testing style itself (Walstad, 2006). The conclusion reached, and ultimately the problem that this project seeks to solve, is that reworking and implementing new styles of testing is difficult for students and educators, but infinitely more meaningful with both.

While current implementation of this type of test is limited, certain members of the education field have discussed the potential of replacing high-

stakes tests—like the SAT II and the GRE—With more open-ended questions, especially considering the increasingly effective way of automating grading through computer programs (Page & Petersen, 1995). Some groups have taken it a step further and added collaborative essay testing to their classrooms. Interestingly, the results of that study only show a slight increase in test scores, but a significant decrease in student stress levels going into that test (Muir & Tracy, 1999).

While essay testing does shore up some of the weaknesses of traditional tests, it is not perfect by itself. As stated before, both subjectivity and the time required to create, take, and grade the assessment are deterring factors to classes implementing them wholesale. However, there are many projects that are or have attempted to streamline this. Various attempts at computer scored essay testing have been tried in order to lessen the burden of these assessments on the instructor, however they have had very mixed results with some grading perfectly and others missing the mark entirely (Trotter, 2002). Although the ability to automate grading of these tests is still out of reach, the difficulties that come with these tests are acceptable when considering just how influential they can be in affecting student performance and stress levels prior to the test.

“Constructivist Assessment”

The assessments that we are considering “constructivist” take ideas and form from these styles. It requires active and meaningful reflection of content, open-ended knowledge-based questions that demand application of information rather than purely recall, and creating authentic experiences for students to

practice executing the skills they are taught. These types of assessments should generally more concerned with the higher levels of Bloom's Taxonomy, citing Evaluation, Synthesis and Analysis as the most common questions (Bloom, 1956). These tests can take a variety of formats. For example, in one classroom, the instructor reworked traditional tests to more "story problem" type questions that provided "real world" authentic problems to be solved. This teacher saw that swapping styles like this lowered the distress that students would suffer during tests, and they would in turn perform better on the exam (Ende, 2014). They can also take the form of identification-based tests that use definitions and reflections on material to help students create a new product or idea. The possibilities are nearly endless when keeping in mind the tenets of constructivism.

While constructivist assessments are relatively new, the ideas they represent have been around in the field of education for a long time. These types of assessments need to be authentic, specifically focusing in on real world applications, reducing it to a manageable size and using theoretical foundations to help the students connect with what is important in the content (Zane, 2009a). They should also focus in on holistic concepts, with formats that account for development and interaction and allow for metacognitive practice (Meltzer & Reid, 1994). In other words, these tests should set students up for success based on their developmental level and through allowing for adequate reflection to take place in the classroom.

Chapter Two Summary

Constructivism is a well-developed theory of how the mind works, blending the ideas of Jean Piaget and Lev Vygotsky. These two ideas create a definition of constructivism that utilizes and keys on both the individual process of creating their own understandings about new material, but also acknowledges the value and contributions of collaboration and building understandings in a community setting. Even though this is a relatively new topic, it holds weight when examining current practices and how best to improve them.

While testing can seem like an extremely difficult aspect of education to rework and improve, the benefits for it are astounding. While measuring student proficiency is a tempting way of assessing ability, student success should measure growth and metacognitive ability as well, in order to assure that students not only know information, but remember the skills to go along with it. Traditional testing, while convenient and objective, does not do the best job at representing the knowledge gained and proficiency of students in American schools. Newer, more constructive methods, are much better at truly assessing the content knowledge of our students in methods that lower the levels of stress our test-takers face. Performance based and essay styled tests are both precursors to the more constructivist styles of assessment that I advocate for in this project, however depending on their use, can be just as beneficial to the success of students.

All of the data found through these studies and articles can contribute to answering the question at hand: *How best can educators implement*

constructivist assessment in a way that benefits all students? By understanding constructivist views, types and purposes of assessments and examining what could be beneficial to students, the formation of these assessments can be expanded upon. The following chapter will discuss the creation of this research project and the methodology and reasoning behind it. The project will take the form of a website that shows instructors how to modify and create constructivist assessments based on new and existing curriculum. Chapter 3 will detail the methodology behind how exactly this project will help implement this testing style.

Chapter 3: Methodology

Introduction and Project Outline

While the pertinent literature is paramount to understanding the research and fundamental ideas behind this project, the methodology and final construction of this project cannot be ignored. My project aim is to create a website that helps teachers answer my research question for themselves: *How best can educators implement constructivist assessment in a way that benefits all students?* The importance of this testing style cannot be understated, as shown in the literature review. The website is divided into a number of sections. The first explains, with links to relevant research, the rationale behind this constructivist assessment style. The second section details example constructivist assessments, both from my classroom and from the resources of others who utilize this style of test. The final two portions are split into two, offering step by step instructions that give procedural tips and examples of creating these tests from existing, more traditional assessments, and examples for creating these tests from scratch for new curriculum.

This website was created using Google Slide Sites, a program through the Google Suite that allows users to create, modify and share detailed websites with others. It has been created with input from other instructors as necessary and I have asked permission from educators before featuring their testing styles.

Rationale for Project Style

Although the justification for the subject of this project has already occurred, the reasoning behind the style of this project should be clarified. Originally, I had envisioned something of a “how to” manual for constructivist assessment. However, upon further analysis I realized this had many flaws. First, it would be inaccessible to a large group of educators that it would probably benefit. Hard copy texts are not easily reproducible and difficult to distribute among readers in areas that are geographically isolated from one another. Most importantly, however, websites are easier to navigate than having to sift through a dense textbook. If the goal of this project truly is to lessen the burden of implementing these new assessments, the process to do so should be relatively painless in terms of understanding and comprehension of the steps.

The rationale behind using Google Sites as a tool is similar. This program has very intuitive controls for users to edit, and takes the overhead cost out of maintaining a website domain or URL. It also has the ability to publish to the worldwide web without restricting access to any user. This is a very important feature that solidifies Google Sites as the most effective and resource efficient method of creating this project.

This project both in function and form emulates the style of constructivism. The intended purpose is for this website to help build an understanding of the tenets of constructivist assessments through seeing, and eventually building, their own. As discussed in the literature review, this methodology and aim is supported by the theoretical works of both Lev Vygotsky and Jean Piaget.

Research shows that some of the best ways to instill meaningful and long-lasting change in educators is through providing examples and modelling the ideas, as well as giving them active incorporation in the implementation (Gulamhussein, 2013). The development of this site was designed with this in mind so teachers can see the examples and actually work with the material themselves, in a content field in which they are knowledgeable and comfortable in.

Audience

This project is intended for educators who teach all ages. While the examples I give are mainly aimed at secondary education (Grades 9-12) the premise of this research is applicable to everyone. This tool is directed at teachers looking to modify and adjust their assessment styles in a way that employs the ideas of constructivism. This project was first introduced to the staff within my district, both to troubleshoot any issues and to start gaining feedback. I also used this as a way to collect more information regarding testimonials that could modify the application of the project.

The scope of this project is wide enough to appeal to every teacher who would want to use this method. As discussed by most professionals, it should be recognized that this kind of research and project is *not* generalizable. This is a tool and resource for teachers who are interested in modifying their assessments. By no means is this meant to prescribe constructivist testing for all classrooms, everywhere.

Evidence of Effectiveness

While this project does not necessarily qualify as action research, it is important to know that it is not generalizable. This means that while the intention of it is to create a useful resource for teachers who would like to modify their testing style, it should not be prescribed for them by others. This also means it is a little difficult to gauge the efficacy of the website. In order to do this, I added a section to the website that allows for users to submit testimonials from their experiences, both identifying things that helped them and allowing for feedback to be sent in so I can adjust and make changes accordingly.

Teacher Involvement

While I was the only one constructing this site, there were many people who played a significant role in the development of this site and gathering of materials. First, I should note that the School Instructional Coach in my building has been a wonderful aid in creating this testing style. This year for us has been in many cases a trial by fire in terms of implementing a new style with no precedent and through her help and guidance I have been able to discover the strengths and weaknesses of this style that I will discuss within the guide. She has played an integral role in troubleshooting the implementation of this style.

Secondly, my department chair has experience implementing these styles of testing as well. She has been a valuable resource in gaining examples of project-based assessment that qualify for the constructivist style that I will be

establishing within this project. Her experience and expertise will play into the value of this style, and hopefully her testimonial of her experiences can convince educators of the values of this style of assessment. Her experiences, along with those of other teachers will be published as part of the rationale section in order to show users why the need exists.

Finally, my analogous teacher who covers the same subject as me has helped immensely in discovering the procedure of implementing this type of test. Fortunately, we both wanted to readjust the scope of our classes to focus more on the levels of application and synthesis of material. Because we both entered the district at the same time, were teaching the same subject field, and had the same goals for our students, we were able to "test-drive" this assessment style and experience the development of it firsthand as the year went on.

Without the help and interest of these third parties this project would not be possible. With their expertise and interest, I have been able to compile and organize a fundamental analysis of effective implementation of constructivist assessment.

Summary

The aim of this project is to develop and create a website that answers the questions: *How best can educators implement constructivist assessment in a way that benefits all students?* This project walks teachers through the process of creating or modifying their tests in a painless, low stress way. It makes the process of implementing this testing style much easier. This website is divided in

a number of subsections that detail the rationale of the project, along with information on its uses. The website itself was created through Google Sites. This tool allows for free construction of detailed websites where publishing world wide is free to the user.

In the next Chapter, I will reflect on the process and completed product of my Capstone Project. It will detail the procedure that I followed to construct it, the reasoning behind the development of it, and the reflection on the final product itself.

Chapter 4: Reflection

Introduction

Through the process detailed in Chapter Three, I have created a website that allows teachers to create or modify tests in a way that is more emblematic of constructivist ideology, rather than outdated traditional methods. The goal of this site is to help teachers answer the question: *How best can educators implement constructivist assessment in a way that benefits all students?* By examining the reflections of the construction process we can see some of the major takeaway learnings along with the implications for educators and future research. I will also discuss the major limitations that I experienced while building this project.

Major Learnings

Undertaking this enriching project allowed me to develop my personal learning in many ways. There were many major takeaways both in the creation process and from the final product itself. First, constructivism is a vast topic. The teachings of Jean Piaget and Lev Vygotsky really just begin the conversation of constructivism in education, and leave the door open for a much larger and more detailed discussion to occur. To what extent is knowledge constructed in the classroom? What degree of scaffolding do your students need? Is construction of knowledge in your classroom an intrinsic reflective process or a collaborative joint exploration? The key behind any sort of educational program, policy or theory needs to be reiterated: Just because it works in one classroom

does not mean it will work in every classroom. It needs to be adjusted and varied to fit in the scope of the individuals' classroom and students.

Second, websites offer a wonderful way to connect educators over long distances. By creating an online resource, I can access teachers across the country with different experiences, focuses and interests. This allows not only my ideas to spread to them, but for them to spread their ideas to me and to others as well. For this purpose, I added a number of communication resources, facilitating interaction between myself as the creator of the original content and teachers who either have questions or would like to propose changes or alteration. There also exists another form engineered to allow teachers to share their creations with each other through the website. As my understanding of constructivism dictates, collaboration is key in forging an understanding of any given topic, and that extends to understanding constructivism itself.

Revisiting Literature Review

After finalizing my project and publishing it, I have noticed that not only the assessment style itself mirrors constructivism in education, but also that the website's organization is focused around the construction of knowledge and experiencing the learning through interaction and collaboration. Reading through the final product and thinking about its impact, I recognize how well this style does in fact represent the combined ideologies of Vygotsky and Piaget and helps to instruct teachers on how best to utilize them in the classroom.

While constructivism was one major aspect of the literature, the other focus of assessment types and intentions was also well represented in my final product. I advocate for using this style both in summative and formative assessment on the website, which links back into the metacognitive focus of constructivism at large (Meltzer & Reid, 1994). Having now finalized the website and all of its available resources, I am struck by how important this project may be for some teachers. Especially with the newer emphasis on more essay-oriented questions in high stakes testing, this shift could help teachers help students show their knowledge in the most accurate and telling way possible (Page & Petersen, 1995).

Limitations

While the medium of a website introduces a lot of possibilities in terms of long distance sharing and collaboration, it does impose a few striking limitations. First, I found myself wanting to implement more methods of direct collaboration. As of right now, using the Google Sites format, I have not been able to create any sort of forum or discussion post on which educators interested in the topic could discuss it with each other and archive their conversations. As of right now, all of that has to be done through Google Forms linked on the website. Ideally, there would be an opportunity for teachers to discuss and interact with the material they have. Moving forward, this site could be ported over to a more customizable and flexible hosting site that allows for those types of additions, however due to my personal ability in website creation, this is what I was restricted to at first.

The other obvious major limitation of my project is the scope of the exemplars at launch. Since I teach 9th grade social studies, those are the assessments and units that I have expertise and experience in. Because of that, all of my examples used on the site at its inception are focused on the 9th grade social studies standards in my district. However, in order to rectify this issue, I have created a number of submission forms that will allow teachers, once they have gone through this process, to send tests in and allow them to be posted as sample work.

Implications for Future Research

While this project is helpful for teachers who are trying to start this type of constructivist testing and help those who have already started, the real value of this lies in the breaking of new ground for action research and discussion. As more teachers implement constructivist tests and utilize constructivism in their classrooms, the door opens for more specific research in the benefits of these styles. Specific inquiries into the efficacy of this style could revolve around proficiency levels, metacognitive ability, test scores, or other academic measurements and their statistical relationship to the use of these constructivist activities and assessments.

This type of research could be done at various levels. In-depth statistical breakdowns of the effects of constructivist thinking and theory could be analyzed by graduate level students. However, any teacher implementing these styles is able to examine the metacognitive shifts that this style provides. This type of action research is much more cursory and has more pitfalls than the more

quantitative style, but still has a lot to contribute in terms of the effects of this style on student learning and academic success. Again, I would recommend any teacher who implements these constructivist assessments to also participate in this informal study of their students.

Benefit to Education

While constructivist testing seems like a simple solution to complex problems, it will allow teachers to more accurately and effectively assess comprehension and understanding of major standardized topics within the education community. It takes the complex world of constructivism in educational psychology and boils it down to step-by-step processes that make implementation almost effortless. While this style might present longer periods of time for grading and preparation, the benefit to the students will be noticeable. Hopefully, this website will give educators attempting this style a chance to interact with other teachers as well as share and implement these ideas.

Summary

My capstone project and the research leading up to it was all focused on implementing a new constructivist testing style and assisting other educators in doing the same. By creating this website, I have provided other educators an option in answering the question: *How best can educators implement constructivist assessment in a way that benefits all students?* This project will be not only a helpful template to myself and my coworkers, but also educators anywhere who can access my website.

Through constructing this website I have learned not just more about the ideas and uses of constructivism, but also the various ways to help other educators discuss and hone those skills as well. By creating this website I have created a resource that hopefully for many educators will make the act of reworking and writing tests easier, more accurate, and better assessments of student knowledge and proficiency.

References

Baldwin, C., Bensimon, E., Dowd, A., & Kleiman, L. (2011). Measuring student success. *New Directions for Community Colleges, 2011(153).*

Barnes, N., Fives, H., & Dacey, C. (2017). U.S. teachers' conceptions of the purposes of assessment. *Teaching and Teacher Education, 65,* 107-116.

Black, P., & William D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability, 21(1).*

Bloom, B. (1956). *Taxonomy of educational objectives*. N.Y.: Longmans, Green.

Brook, J. G & M. G. (1999). *In search of understanding: the case for constructivist classrooms*, Merill Prentice Hall.

Comstock, E. (2013). Constructivism. In J. Ainsworth (Ed.), *Sociology of education: An a-to-z guide,* (Vol. 1, pp. 151-152). Thousand Oaks, CA: SAGE Publications Ltd. doi: 10.4135/9781452276151.n87

Costa,. A. L. (2001) *Developing minds: A resource book for teaching thinking* (third edition). Alexandria, VA: Association for Supervision and Curriculum Development

Ende, F. (2014). Every assessment tells a story. *Science Scope*, 37(5), 32-37.

ESSA (2015). Every Student Succeeds Act of 2015, Pub. L. No. 114-95 § 114 Stat. 1177 (2015-2016).

Eshach, H., Dor-Ziderman, Y. Arbel, Y. (2011). Scaffolding the "scaffolding" metaphor: From inspiration to a practical tool for kindergarten teachers. *Journal of Science Education and Technology*, 20 (5), 550-565.

Fisher-Ari, T., Kavanagh, K., Martin, A. (2016). Sisyphean neoliberal reforms: the intractable mythology of student growth and achievement master narratives within the testing and TFA era. *Journal of Education Policy*, 32(3), 255-280.

Fosnot, C. (2005). *Constructivism: Theory, perspectives, and practice (2nd ed.)*. New York, New York; London, [England]: Teachers College Press.

Gulamhussein, A. (2014). What will it take to change? ('Teaching the teachers: effective professional development in an era of high stakes accountability' excerpt) (Double Take) (Excerpt). *Educational Leadership, 71(8), 8*.

Hart, R., Casserly, M., Uzzell, R., Palacios, M., Corcoran, A., & Spurgeon, L. (2015). Student testing in America's great city schools: an inventory and preliminary analysis. *Council of the Great City Schools.*

Inglis, F., & Aers, L. (2008). *Key concepts in education*. London: Sage.

Knapp, N. F. (2000). Constructivist assessment: trying to practice what I teach in educational psychology. *Action in Teacher Education (Association of Teacher Educators*), 21(4), 9-26.

Lin, Q. (2002). Beyond standardization: Testing and assessment in standards-based reform. *Action in Teacher Education (Association of Teacher Educators), 23*(4), 43-49.

McLeod, S. (2009). Jean Piaget. [online] Simply Psychology. Available at: http://www.simplypsychology.org/piaget.html [Accessed 30 Apr. 2015].

Meltzer, L., & Reid, D. K. (1994). New directions in the assessment of students with special needs: The shift toward a constructivist perspective. *Journal of Special Education, 28*, 338-355.

Muir, S. P., & Tracy, D. M. (1999). Collaborative essay testing: Just try it! *College Teaching*, 47(1), 33-35. doi:10.1080/87567559909596077

NCLBA (2001). No Child Left Behind Act of 2001, P.L. 107-110, 20 U.S.C. § 6319 (2002).

Newstead, S. (2004). The Purposes of Assessment. *Psychology Learning and Teaching, 3(2).* 97-101.

Page, E. B., & Petersen, N. S. (1995). The computer moves into essay grading: Updating the ancient test. Phi Delta Kappan, 76, 561-565.

Powers, D. E., & Fowles, M. E. (1999). Test-takers' judgments of essay prompts: Perceptions and performance. *Educational Assessment*, 6(1), 3-22. doi:10.1207/S15326977EA0601_2

Schreiber, L., & Valle, B. (2013). Social constructivist teaching strategies in the small group classroom. *Sage Journals, 44(4).* 395-411.

Souchal, C., Darnon, C., Smeding, A., Butera, F., & Martinot, D. (2014). Assessing does not mean threatening: The purpose of assessment as a key determinant of girls' and boys' performance in a science class. *British Journal of Educational Psychology*, 84. 125–136. 10.1111/bjep.12012.

Trotter, A. (2002). States testing computer-scored essays. *Education Week*, 21(38), 1-14.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes (M. Cole, V. John-Steiner, S. Scribner & E. Souberman., Eds.) (A. R. Luria, M. Lopez-Morillas & M. Cole [with J. V. Wertsch], Trans.) Cambridge, Mass.: Harvard University Press. (Original manuscripts [ca. 1930-1934]).

Walstad, W. B. (2006). Testing for depth of understanding in economics using essay questions. *Journal of Economic Education*, 37(1), 38-47. doi:10.3200/JECE.37.1.38-47

Watanabe Crockett, L. (2016). The critical thinking skills cheat sheet https://globaldigitalcitizen.org/critical-thinking-skills-cheatsheet-infographic

Zane, T. W. (2009a). Performance assessment design principles gleaned from constructivist learning theory (part 1). *TechTrends: Linking Research & Practice to Improve Learning*, 53(1), 81-88. doi:10.1007/s11528-009-0242-5

Zane, T. W. (2009b). Performance assessment design principles gleaned from constructivist learning theory (part 2). *TechTrends: Linking Research & Practice to Improve Learning*, 53(3), 86-94.

Zvacek, S. M. (1999). What's my grade? assessing learner progress. *TechTrends: Linking Research & Practice to Improve Learning*, 43(5), 39-43. doi:10.1007/BF02818164